

Amendments to the Claims:

Claim 1. (currently amended) An apparatus ~~to provide separation and detection of components within a sample, the apparatus~~ comprising:


a first separation means; to separate a sample introduced into the first separation means into fractions;

a second separation means to receive each of the fractions separately and to separate each received fraction into components;

an interface means to link the first separation means and the second separation means; and

~~a second separation means wherein the interface means links the first separation means and second separate means and~~

a detector ~~for detecting~~ to detect the components subjected to the apparatus.

 Claim 2. (currently amended) ~~An~~ The apparatus of claim 1, ~~which includes~~ further including:

a first high voltage power source connected across the first separation means; and

a second high voltage power source connected across the second separation means.

Claim 3. (currently amended) ~~An~~ The apparatus ~~as claimed in~~ of claim 2, wherein said first separation means is a capillary electrophoresis system and said second separation means is a sieving electrophoresis system.

Claim 4. (currently amended) An apparatus for providing ~~high sensitivity~~ detection of components of ~~biological~~ samples, the apparatus comprising:

a first and second separation means, each selected from the group consisting of: isoelectric focusing electrophoresis systems, ~~SDS polyacrylamide gel~~ a capillary sieving electrophoresis system, a free solution electrophoresis system, a micellar electrokinetic chromatography system, a reversed phase liquid

chromatography system, a normal phase chromatography system, an ion exchange chromatography system, and a size exclusion chromatography system;

an interface chamber in which ~~components~~ fractions separated from a sample according to ~~by~~ said first separation means are to be mixed one at a time with a derivatizing agent prior to subjection of each of the fractions one at a time to said second separation means;

~~one of~~ a first power supply ~~and or~~ a first pump coupled to ~~perform~~ the first separation means;

~~and one of~~ a second pump ~~and or~~ a second power supply coupled to ~~perform~~ the second separation means; and

a detector.

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Claim 5. (currently amended) The apparatus of claim 4, wherein said detector is a ~~high sensitivity~~ laser induced fluorescent detector.

Claim 6. (original) The apparatus of claim 5, wherein said first separation means is an isoelectric focusing electrophoresis system, and said second separation means is a sieving electrophoresis system.

Claim 7. (currently amended) An apparatus ~~as claimed in any preceding claim, which includes comprising:~~

a plurality of first separation means;

a plurality of second separation means; and

a manifold providing a plurality of interface regions, each interface region providing an interface between a respective one of the first separation means and a respective one of the second separation means,

wherein each first separation means is to separate a sample introduced therein into fractions, and a respective second separation means is to separately receive each of the fractions and to separate each received fraction into components.

Claim 8. (currently amended) ~~An~~ The apparatus ~~as claimed in~~ of claim 7 wherein the manifold comprises:

an inlet, for connection to buffer reservoirs and valve means permitting selective connection to a desired buffer reservoir; and

a channel network connecting the inlet to the plurality of interface regions, wherein each interface region comprises a port for connection to a respective one of the first separation means, a port for connection to a respective one of the second separation means and a third, waste port.

Claim 9. (currently amended) ~~An~~ The apparatus ~~as claimed in~~ of claims 7 or 8, which includes a two-dimensional sheath flow cuvette, wherein the second separation means includes a plurality of capillaries, mounted in a two-dimensional array in the two-dimensional sheath flow cuvette; a light source; and optical system for illuminating ends of the capillary tubes with radiation from the light source; and an optical collection system aligned with the ends of the capillary tubes, for collecting radiation and, the optical collection system optionally including a camera lens, a bandpass filter, a prism and a camera and being aligned axially with the ends of the capillary tubes.

Claim 10. (currently amended) A method of separating ~~and detecting~~ components in a sample, the method comprising:

~~subjecting said sample to an apparatus which consists of high resolution separation and high sensitivity detection of components within a sample, the apparatus comprising a first separation means, an interface means, a second separation means and a detector for detecting components subjected to the apparatus, wherein the interface means links the first separation means and the second separation means, the method comprising passing~~ introducing the biological sample through ~~the~~ a first separation means to achieve a first separation into fractions;


separately passing each of the sample fractions out of the first separation means into the interface means, ~~separating the sample into fractions with the interface means;~~ and

separately passing each fraction through ~~the~~ a second separation means.

Claim 11. (currently amended) A The method of claim 10, ~~which includes further comprising~~ providing an electric field across each of the said first separation means and said second separation means with a high voltage power source.

Claim 12. (currently amended) A The method of claim 11, wherein said first separation means is a capillary electrophoresis system and said second separation means is a sieving electrophoresis system.

Claim 13. (currently amended) A method ~~of providing high solution separation and high sensitivity detection of components in biological samples, the method~~ comprising:

 (a) ~~passing~~ introducing a biological sample ~~through~~ into a first separation means selected from the group consisting of: isoelectric focusing electrophoresis systems, ~~SDS polyacrylamide gel~~ a capillary sieving electrophoresis system, a free solution electrophoresis system, a micellar electrokinetic chromatography system, a reversed phase liquid chromatography system, a normal phase chromatography system, an ion exchange chromatography system, and a size exclusion chromatography system;

(b) applying a voltage across said first separation means to separate ~~passing the sample out of the first separation means and separating~~ the sample into fractions;

(c) passing each fraction separately through a second separation means selected from the group consisting of: isoelectric focusing electrophoresis systems, ~~SDS polyacrylamide gel~~ a capillary sieving electrophoresis system, a free solution electrophoresis system, a micellar electrokinetic chromatography system, a reversed phase liquid chromatography system, a normal phase chromatography system, an ion exchange chromatography system, and a size exclusion chromatography system;

applying a voltage across said second separation means to separate the fraction into components; and

(d) detecting the components of the ~~sample~~ fraction leaving the second separation means ~~with a detector, wherein the method includes applying voltages across said first separation means and said second separation means.~~

Claim 14. (currently amended) A ~~The method as claimed in~~ of claim 13, which includes mixing each of the sample fractions with a derivatizing agent ~~in the an interface means~~ prior to passing each fraction separately through the second separation means.

Claim 15. (currently amended) The method of claim ~~15~~ 14, wherein detecting the components comprises detecting the components with ~~said detector~~ is a high-sensitivity laser induced fluorescent detector and wherein the derivatizing agent reacts with ~~components~~ the fractions of the sample to make the components fluorescent.

Claim 16. (original) The method of claim 15, wherein said first separation means is an isoelectric focusing electrophoresis system, and said second separation means is a sieving electrophoresis system.

Claim 17. (currently amended) A method ~~as claimed in any one of claims 10 to 16~~ comprising:

~~providing a plurality of first separation means and a plurality of second separation means and a plurality of interface means, with each interface means providing a link between a respective one of the first separation means and a respective one of the second separation means, and wherein the method further comprises;~~


for each of ~~the~~ a plurality of first separation means and second separation means linked by a respective interface means; to a respective one of a plurality of second separation means:

introducing ~~passing~~ a biological sample ~~through into~~ each of the first separation means to achieve a first separation; into fractions;

separately passing each of the fractions ~~the sample~~ out of the first separation means into the respective interface means; and

~~separating the sample into fractions with the interface means and~~
separately passing each fraction ~~through a~~ into the respective
second separation means to achieve a separation of the fraction into components.

Claim 18. (currently amended) A ~~The method as claimed in of claim 17, which comprises providing wherein~~ all the interface means are provided in a common manifold, ~~and providing the manifold with an inlet, for connection to buffer reservoirs, a valve means permitting selective connection to a desired buffer reservoir, a channel network connecting the inlet to the plurality of interface regions, providing each interface region with a port connected to a respective first separation means, a port connected to a respective second separation means and a third, waste port, wherein the method comprises further comprising:~~

 providing a plurality of buffer reservoirs connected to the inlet of a manifold and operating ~~the~~ a valve means to connect a selected one of a plurality of buffer reservoir reservoirs to the inlet of the manifold, ~~whereby so that~~ the same buffer reservoir is connected to all the interface means ~~regions and similar processing steps occur simultaneously in the interface regions.~~

Claim 19. (currently amended) A ~~The method as claimed in of claim 17 or 18, which further includes providing a planar surface with a plurality of immobilization sites for capturing cells, providing wherein~~ the plurality of first separation means includes with capillary tubes having inlet ends ~~and mounting the inlet ends in an array corresponding to the location of immobilization agents on the planar surface, and wherein the method further comprises:~~

capturing at least one cell of the ~~providing a biological sample at a~~ respective one of a plurality of immobilization agent sites on ~~the~~ a planar surface, ~~whereby at least one cell is captured by each immobilization agent site,;~~

aligning the inlet ends of the capillary tubes of the first separation means with the immobilization agent sites,; and

drawing the cells into the capillary tubes ~~of the first separation means, for effecting a first separation in each capillary tube.~~

AB Claim 20. (currently amended) A ~~The method as claimed in~~ of claim 19, wherein each immobilization site is sized to retain a single cell.

Claim 21. (cancelled)

AB Claim 22. (new) The apparatus of claim 7, wherein the plurality of first separation means and the plurality of second separation means are selected from the group consisting of: isoelectric focusing electrophoresis systems, a capillary sieving electrophoresis system, a free solution electrophoresis system, a micellar electrokinetic chromatography system, a reversed phase liquid chromatography system, a normal phase chromatography system, an ion exchange chromatography system, and a size exclusion chromatography system.
